Abstract

This paper describes the Multimedia Educational Pills (MEPs) model. MEPs are highly concentrated courses, designed to address a topic through multiple representations, following a recursive, non-cumulative, logic, as pointed out by the Cognitive Flexibility Theory (CFT) methodology.

MEPs have been designed to meet the educational challenges posed by the transition from an industrial to an information age. They focus on promoting the capacity to deal with uncertainties and solve problems in an adaptive way.

Variety is the key to the architecture and the main benefit of applying MEPs. In fact, MEPs are made up of multiple resources. Each learning object has its own particular shape, perspective and conceptual dimension. In addition, the MEPs are designed to be used in multiple ways, such as e-learning, classroom, blended learning, and to be accessible on multiple devices. MEPs can support multiple teaching strategies (such as self-training, cooperative learning) and multiple learning architectures. In particular MEPs - used before or as follow-up - can integrate and improve traditional classrooms. Finally MEPs can be used in support of coaching paths or in support of outdoor training paths.

Multimedia Educational Pills; E-learning; Soft Skills; Visual Thinking; Cognitive Flexibility Theory; Blended Learning; Multimedia Learning; Corporate Training

I. INTRODUCTION TO THEORETICAL BACKGROUND AND METHODOLOGY

The transition from the industrial to the information age had led to deep social, economic and cultural changes [1]. Organizations and individuals operate in increasingly complex and ill-structured environments, where traditional approaches, based on knowledge simplification and standardization of procedures, show significant limits: rejection of cognitive complexity and oversimplification leads to transfer errors that cause failures in problem solving and cognitive blocks [2]. We need other ways to challenge complexity. In addition to technical and domain-specific skills, organizations should also promote strategic skills, such as cognitive flexibility, which is “the ability to spontaneously restructure one’s knowledge, in many ways, in adaptive response to radically changing situational demands” [3]. This leads to a new conception of educational systems, which can go beyond directive models, focused on linear single-prospective cognitive organizations. The Cognitive Flexibility Theory (CFT), developed by Rand J. Spiro and colleagues, supports a particular methodology that consists in crossing and recrossing the same knowledge domain in a non-linear and multidimensional manner [4]. From the educational point of view, this means providing learning environments with multiple and varied resources and designing recursive fruition logics [5]. The application of CFT methodological recommendations, in particular aspects related to the criss-cross landscape concept, is one of the main characteristics of the model described in this article, called Multimedia Educational Pills (MEPs). MEPs are highly concentrated courses, designed to address a topic through a variety of representations, and based on a recursive, non-cumulative, logic.

II. MULTIMEDIA EDUCATIONAL PILLS (MEPs)

Multimedia Educational Pills shape knowledge and introduce concepts to the learner by an innovative way. Pills permit the creation of main constructivism theories: learners can shape a unique learning process, in accordance with their training needs. MEPs structure highlights main concepts (about soft skills or technical competencies) through different channels. Thanks to its hypertext structure, this model has many levels such as principle menu, covers, screen text and in-depth PDFs. The learner can proceed in a personal way, to achieve his/her learning objectives. The exclusive MEPs format approaches contents in a complete, rigorous manner. The language of each Learning Object is simple, synthetic, visual, friendly. These are the main Learning Objects:

- Intro – the guiding character introduces the contents
- Pill. A nice picture intrigues learners.
• Post it skills – an interactive self-assessment activity. The learner identifies his/her strengths and improvement areas.
• Cartoon or fiction – real situations contextualize contents.
• Tutorial – a speech summarizes core competencies, key words appear into the screen (about 3 minutes running time).
• Game, Art, Literature – edutainment components sharpen lateral thinking, stimulate reflection, favour different points of view.
• Technique - card with practical hints.
• Book – all contents of the Pill in a PDF file.

Learning Objects can be used freely. The MEP menu suggests a logical order, but learners can play objects by their favorite way. Each object is complete and independent, even if an absolute connection still subsists. The tutorial represents the Pill’s primary object. In fact it contains core competencies and useful tips. Thanks to visual strength of images and key work appearing in the screen window, the tutorial captures the learner’s attention and promotes content memorization. Today the tutorial rises thanks to a specific project, following Visual Thinking guidelines [6, 7]. In addition, MEPs learning time is shorter than traditional training, but the didactic value is high. The MEP objective is to approach a training subject in a complete way, thanks to boosts and links that promote personal reflection and start proactive processes for continuous development.

In short, MEPs methodology features are: Light, friendly communication; short time fruition; focus on basic contents (low cognitive load); emotional participation to cross psychological barriers, typical of training adults.

These are the main advantages: links to real experience, through the use of cartoons and fiction showing concrete situations; reflection on personal experience and development of new points of view, through the use of edutainment objects (game, art and literature); self-awareness and personal development, through the use of post it skills, technique, and close examination.

Moreover MEPS resources are aimed at involving participants in discursive interaction. In particular, fiction and cartoons can stimulate participant identification and initiate a debate, which starts from personal experiences. As participants are going through the different phases of discursive negotiation, they develop analytic, cognitive and linguistic skills, enhancing conceptual change. Learning advances through collaborative interaction and the circulation of narratives. Forms of discourse become forms of thinking [8]. According to this perspective, MEPs resources can facilitate the development of virtual professional communities [9, 10], enhancing knowledge creation and sharing, cooperative learning, sensemaking and identification processes [11].

III. PRACTICAL USE/APPLICATIONS

The instructional model of MEPs makes them flexible and suited to several methods of use, in which the roles of trainer and learner differ according to the case in question (whether it is more or less active). 1) Just in e-learning (Web Based Training - WBT): MEPs are basic learning tools in online courses; in this case the role of trainer is absent. MEPs are consulted in self-training through the Learning Management System (LMS) or the company intranet. MEPs are SCORM compatible and can be traced in the platform. 2) Just in classroom: trainer can use the multimedia resources of MEPs to support the traditional teaching method, to make it more experiential and concrete. 3) Blended learning (face to face and e-learning): MEPs can also be used in mixed training; for example, to make a part of the pill (or the complete pill) available online before teaching in the classroom (pre-work) to standardize the level of knowledge of the subject and address the face to face lesson from a knowledge of the same; or to make the complete pill available online after classes as follow-up in the learning process and to review the concepts discussed in class.

MEPs can also be accessed by multiple devices: pc, notebook, interactive whiteboard, ipad, iPhone, blackberry and other mobile devices [12].

IV. CASE HISTORIES

According to the learning design methodology described above, the MEPS can be combined in several blended paths.

A. Blended and on the job

One example is the “Knowledge Experience” project organized during March-October 2010 and addressed to 700 managers in the second Italian banking group. The course, focused on the issues of innovation and initiative, consisted in two steps: a blended phase, with MEPS made available in the intranet as a “warm up” step, and face-to-face training; and a on the job phase with the use of the MyProjectWork® application, which guided participants in the formulation of a personal improvement project. All phases were accompanied with the MyBookShell® application, a shared interactive library available to all participants. At the end of the course, participants selected one of the proposed workshops -3 hours mini training events- in which the trainer was accompanied by experts from sports, culture, science, and arts. The project provided a complex learning architecture to scaffold learning and conceptual change.

B. On line pre-work and face to face training

Another example of a blended learning project involved the employees of one of the main Chilean telecommunications companies and was aimed at improving employee knowledge of Company products and services, market trends and innovation, and Company strategy to meet market needs. The course consisted in online self-training through the MEPs, available in the intranet and used as pre-work and introduction to the face-to-face training sessions. Moreover, MEPs were used during the face-to-face sessions to stimulate discussion among participants. MEPs success
and efficacy in this project were related to the use of a friendly, simple and mainly visual language to communicate technical contents.

C. Web Based Training

Other two examples relate to Web Based Training, where people can use MEPs directly from a website (www.skilla.com) or from their own company’s Intranet or e-learning platform. For behavioral skills courses, a project in a big, international pharmaceutical company was carried out to develop a culture of diversity amongst its employees in Italy and worldwide (about 2,000 in Italy and a total of 90,000 employees around the world). In fact, diversity management is increasing in relevance in modern companies [13] and training is by far the most common component of diversity programs [14]. To this end, the company included 5 MEPs on its e-learning platform on the issues of equity, gender inclusion, work-life balance. In addition, interactive totems in the canteen were used in Italy. For technical skills courses, another project involved a leading telecommunications company in the Italian market in 2006 to provide its 138 managers with the motivation and tools required to promote personal accountability. The online training program was developed on a Moodle e-learning platform and included 60 MEPs classified in three different areas: Self (20 pills for personal growth); Team (20 pills to develop leadership skills); and Company (20 pills to develop work methods and share the basic values of a responsible company). The final report revealed that 62% of the population accessed the platform at least once; the most viewed learning pills were those in the Self area (62%); and the most “attended” session was the situational area with cartoons and fictional stories (21%), followed by didactic games (15%). In depth interviews showed that participants enjoyed both the friendly and creative aspects of the platform and that MEPs helped them reconsider their own behavior and improve their relational skills [15].

V. CONCLUSIONS

This paper describes the MEPs model as the result of multiple experiences in many important companies and of 7 different PhD dissertations dedicated.

The strength of the proposed model seems to come from the combination of an effective educational product (MEP) with the innovation of the leaning experience design. According to this study, MEPs may offer great educational opportunities for constructivist-based courses based on participation, motivation, self-awareness, critical thinking and negotiation of meanings. These opportunities are not to be taken for granted, but should be pursued by all stakeholders (managers, designers, teachers, etc.) involved in training processes.

We argue that the more companies develop awareness of their needs and are open to change and understanding the opportunities provided by new training approaches, the greater the chances of success related to MEPs are. This new approach seems to be increasingly critical in a complex, constantly changing environment, where employees need to develop strategic meta-skills, such as cognitive flexibility, to address different situations and unknown problems. Franco Amicucci writes on this: “Designing managerial training for innovation means breaking mental habits that merely identify training with the traditional classroom, and introducing a new vision that includes self-training, innovative classroom, e-learning, outdoor training, and transformation of everyday working within an environment of lifelong learning” [16].

REFERENCES